

Introduction

The resin is based on a solid Isophthalic polyester formulated by ACG (Manchester) for the impregnation of glass, natural and synthetic fabrics and paper reinforcements.

The prepregs produced from this resin can be laminated by matched metal moulding or by vacuum bag techniques. The material, however, is more commonly processed by a combination of negative and positive pressures, i.e. vacuum bag in autoclave.

Reinforcement

Although many types of reinforcements are available, and indeed are used, but the largest use is made of woven glass fabrics generally employing 7781 and RP25 style fabrics.

Cure Schedules

With the standard system incorporating Benzoyl Peroxide, temperatures within the range of 80° to 140°C may be used. However, for normal practice, to speed up cure cycles and ensure optimum cure, then temperatures within the range of 120° to 130°C are recommended.

The cure time will depend upon the thickness of the laminate being prepared and as a guide, when press laminating a section of 3 mm, a cure time of 15 - 20 minutes at 125°C will be sufficient. When oven or autoclave curing, a similar schedule applies but the overall cycle must be lengthened to allow the material and tooling to reach the curing temperature.

For thick sections, longer ramp up times together with dwells at lower temperatures are suggested to overcome the differences in the internal and external temperatures of the laminate, and for the avoidance of exotherms.

The maximum recommended pressure is a nominal 50 psi (3 Bar) since higher pressures will force the resin out of hard fibres such as glass.

Shelf Life

For Press Moulding

12 Months at 0 - 5°C
6 Months at 20°C

For Bag Moulding

6 Months at 0 - 5°C
3 Months at 20°C

Basic Resin Systems

Prepregs based on this polyester resin can be produced dry or with excellent drape and tack characteristics for the moulding of complex shapes. Other modifiers such as fire retardants or pigments may be added.

The basic resin systems are:

SM008	Standard clear polyester with light to medium tack. (Vac Bag laminates).
SM021	Standard clear polyester with zero to low tack. (Press laminates).
SM122	Clear Polyester for tube rolling applications 120°C cure.
SM349	Clear Polyester for tube rolling applications 140°C cure.

Applications

The range of reinforcements that can be impregnated with this polyester gives an infinite number of suitable applications for these prepregs. To name a few:

<u>Product</u>	<u>Reinforcement</u>	<u>Application</u>
SL118	RP 25 Glass	Armour - Helmets
SL132	Polyester Felt	Electrical Insulation - Generators
SL139	7781 Glass	Secondary Structures – Helicopters
SL145	Bias Glass	Black pigmented tube applications (140°C)
SL153	Bias Glass	White pigmented tube applications (120°C)
SL158	Aramid	Armour - Ballistic Panels
SL194	Glass	Radomes
SL235	Polyester	Radomes
SL237	Nylon	Armour – Helmets

Typical Laminate Properties – SL139/01

<u>Reinforcement</u>	<u>7781</u>
Laminate RC	35 %
Flexural Strength Dry	650 MPa
Flexural Modulus	25 GPa
Flexural Strength Wet *	600 MPa
Flexural Modulus	23 GPa
Tensile Strength Dry	400 MPa
Tensile Strength Wet *	360 GPa

- * After 2 hour water boil.
- SL139/01 is normally supplied tested and released to WHMS 282.

Health & Safety

Full Material Safety Data Sheets are available on request, but it should be noted that unlike the “wet lay up” systems that this polyester prepreg can replace, they do not contain styrene, and therefore help to promote a safer working environment.